

FLIGHT

The
**AIRCRAFT
ENGINEER
&
AIRSHIPS**

First Aero Weekly in the World

Founder and Editor : STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:—

1927

Jan. 13	Professor F. C. Lea, D.Sc., M.Inst.C.E., M.I.Mech.E. "Some Experiments on the Effects of Repeated Stresses on Materials," before Inst.Ae.E.
Jan. 25	Mr. F. S. Barnwell, B.Sc., O.B.E., A.F.C., F.R.Ae.S. (Honours Member). "Some Notes on the Design of Airscrews," before Inst.Ae.E.
Feb. 1	Mr. A. H. R. Fedden, F.R.Ae.S. "Supercharging for Aero Engines," before R.Ae.S.

EDITORIAL COMMENT.



IN the whole, a very satisfactory year. This, we think, must be the verdict on the year which has just come to a close. If there was much in 1926 that might have been better, there was certainly a great deal that might very easily have been a lot worse. For aviation in general the year has been a good one, with considerable activity in most countries manufacturing aircraft, and after all the number of new and improved types of machines produced forms some index to the progress made, although the use that has been made of such aircraft as has been produced is, perhaps, a no less important factor.

As far as Great Britain is concerned, the year did not promise well when the 1926-27 Air Estimates were published, since the expansion that had been contemplated was seriously curtailed. In spite of this, however, it seems fairly clear that, at any rate, the majority of our aircraft firms have been able to carry on at least, even if some have undoubtedly had a somewhat lean time. In this connection we cannot refrain from putting in a strong plea for greater consideration for the aircraft industry: It is an incontrovertible fact that in an industry initially existing almost exclusively for the supply of material for a fighting service the continuity of orders is of relatively greater importance than the actual magnitude of the orders. In the past the British aircraft industry has suffered severely—and we think unnecessarily—from the spasmodic manner in which orders have been issued. Firms would be feverishly busy for a few months, and would then be almost at a standstill for a long period while awaiting the next order. We cannot believe that this is unavoidable. It appears likely that when the Air Estimates come to be issued it will be found that a considerable increase all around is contemplated so as to make up the leeway which last year's curtailed Estimates brought with them. Would it not, at the same time, be possible to revise the present system of placing orders, so that firms might be told early what amount

was likely to be spent with each? Unless some improvement of this sort is introduced we fear that even a substantial increase in the vote for "Technical and Warlike Stores" will not result in that healthy and prosperous aircraft industry which is the main pivot in our security in the air.

With this plea we may turn to a brief review of what the past year has brought in the way of progress. Three main features appear to stand out prominently: the number of exceedingly meritorious flights, the beginning of real Empire aviation, and the rapid progress made in the development of the seaplane type of machine.

We have not here the space to refer to anything like all the flights made during 1926, which have helped to "make history." As far as concerns British flights, those made by Alan Cobham on the de Havilland D.H.50 with Armstrong-Siddeley "Jaguar" engine are, of course, of outstanding merit. The flight to Cape Town and back, a distance of some 17,000 miles, and that to Australia and back, totalling some 45,000 miles, did much to raise the prestige of British aviation. Nor should one forget the R.A.F. flight on four Fairey-Napier machines from Cairo to Cape Town, back to Cairo and on to England, under Commander Pulford, nor the flight of two Supermarine "Southampton-Napiers" from Portsmouth to Aboukir and back, under Squadron Leader Livock. The flight by Col. Minchin on a Bristol "Bloodhound," with "Jupiter" engine, from London to Cairo in 50½ hours was another fine performance, as has been the flight in two "Moths" piloted by Stack and Leete towards India. Col. the Master of Sempill's flight on a "Moth" in one day from Lands End to John o'-Groats proved what can be done on a low-powered machine. In Australia there is the flight of Col. Brinsmead from Melbourne to Normanton and back in a D.H.50, and in South Africa the non-stop flight of Major Mentjes from Pretoria to Durban and back to Pretoria to record. The former of these was a flight of 3,320 miles, and the latter was a non-stop one of 1,200 miles, the D.H.9 remaining aloft for 13½ hours. Group Captain Williams' flight in a D.H.50 Puma to the islands of the Pacific is a seaplane performance of no small merit. Altogether the year has not been without its British contributions to history-making flights. The splendid progress of the three de Havilland "Hercules" machines, with "Jupiter" engines, towards India, although not planned as such, really rank among the fine flights of the year. To have taken three machines of a new type straight out of the works and send them off on a journey of many thousand miles, all three machines getting through without a hitch and with perfect regularity, is an achievement that speaks volumes for British aircraft design and construction.

Of flights made by foreign aviators three stand out particularly as real milestones in aviation: The flight across the South Atlantic by Commandant Franco in a Dornier flying-boat with Napier "Lion" engines; Commander Byrd's flight from Spitzbergen to the North Pole and back in a Fokker three-engined monoplane, and Amundsen's flight from Spitzbergen over the North Pole and "across the top of the world" to Alaska in the Italian airship "Norge," designed and piloted by Signor Nobile.

For the rest, the year has been chiefly remarkable for the series of astonishing long-distance non-stop

flights made by French aviators, culminating in the establishment of a new world's record non-stop flight, by Lieut. Costes and Captain Rignot, in a Breguet 19 from Paris to Jask, a distance of 5,400 km. (3,350 miles).

While on the subject of world's records, may we once more plead with the British Air Ministry for permission and co-operation to be given to British firms to attempt world's records in cases where a firm has produced a machine capable of beating existing records in one or more of the categories recognised? We know that there are quite a number of such records which could—and should—stand to the credit of Great Britain. The granting of permission by the Air Ministry is not to ask the impossible, and it might mean a great deal to British prestige.

The rapid progress of seaplane development has been a most noticeable feature of the past year. There was a time when the seaplane was very stepmotherly treated in this country, but at last the authorities appear to have been brought to a realisation of the immense possibilities of the seaplane, and the result has been almost immediate. We have produced seaplanes that are well in advance of anything produced by any other nation. The Supermarine "Southampton" is a case in point as regards twin-engined flying-boats. The cruise to Aboukir demonstrated that. The Short "Singapore" is another, but of this little enough may be said, except that it is an all-metal flying-boat. The Blackburn "Iris," with three Rolls-Royce "Condors" is, perhaps, the most powerful flying-boat of its type in the world, and promises to change the course of future development as regards seagoing aircraft. And finally, there was designed, during 1926, although not actually built in that year, the Short "Calcutta" (three Bristol "Jupiters"), Great Britain's first three-engined commercial flying-boat. Truly, a wonderful "seaplane year," and one which gives great hopes for the future. Nor should one forget to mention, in this connection, the production, during the year, of the Short "Mussel" two-seater light seaplane, and fitting with floats of the D.H. "Moth," both machines which promise well for the future of the low-powered seaplane.

Of the new aeroplanes produced during 1926, but little may be said, owing to service restrictions, but several types have been produced in the different classes varying from the heavy twin-engined bomber to the small single-seater fighter, which mark pronounced improvements in their respective categories, and with which the R.A.F. is now gradually being equipped.

Of civilian types are to be recorded the Avro "Avian" in the light 'plane class, the Armstrong-Whitworth "Argosy," the de Havilland "Hercules," and the Handley Page "Hamlet," in the three-engined commercial class. The racing seaplanes built under the new "high-speed" policy of the Air Ministry are, unfortunately, surrounded by a veil of secrecy—a totally unnecessary veil, most people think—but their production and existence should, at any rate, be recorded. Doubtless, a good deal will be heard of them during the present year. While on the subject of racing seaplanes, a tribute should be paid to the Italian Macchi and Fiat companies for their production of the machine and engine which won the Schneider Cup race at an average speed of 246.496 m.p.h., and later established a new record for seaplanes by averaging 258.5 m.p.h. over the 3 km. course.

THE SHORT "CALCUTTA" FLYING-BOAT

Three Bristol "Jupiter" Engines

As first announced in *FLIGHT* last week, two new flying-boats are now in course of construction for Imperial Airways at the Rochester works of Short Brothers. At the moment it is not possible to give very full details of these machines, nor to state precisely where they are to be used, but we have obtained permission to publish herewith the general arrangement drawings, from which a good idea of the lines of these machines may be formed. At the same time it is possible to give a brief general description of the main features, a more detailed reference being reserved for some future occasion, when the constructional work on the new boats is somewhat more advanced.

As we on *FLIGHT* have for very many years been firm believers in, and have made ourselves the champions of, the seaplane as a factor in Empire communications, it is naturally with very considerable satisfaction that we are now able to place on record the fact that at last Imperial Airways appear to be seriously contemplating the organisation of seaplane routes. Hitherto the only route of this kind has been that between Southampton and the Channel Islands, and a service operated once a week over a route where, in the very nature of things, there cannot be very much traffic is scarcely in keeping with the spirit of British Empire aviation. The solitary flying-boat used on this route has been spending nearly the whole of its time "sitting" on the Itchen, a familiar landmark to those who regularly use the floating bridge between Southampton and Woolston. Doubtless this use of a flying-boat may have provided data as to weathering qualities, hull soakage, etc., but it is scarcely the way to progress in Empire seaplane communications.

Readers of *FLIGHT* will be familiar with the pioneer work on Duralumin construction which Short Brothers have been carrying out since the end of the war. Commencing with the famous "Silver Streak," exhibited at the post-war Olympia aero show, this firm has continued to develop a form of construction totally different, as far as we are aware, from any used by any other firm in the world. Although detail improvements have naturally been evolved during the intervening years, the system remains substantially the same as that used in the "Silver Streak," and this whether the job is a flying-boat hull or an aeroplane fuselage. Without going into too great detail, it may be said that this system consists fundamentally in a stress-resisting "skin" or planking, stiffened against compression loads by longitudinal stringers, which do not, however, run through from nose to stern, as is the case with most other forms of construction, but are interrupted at each of the "rings" or formers that give the fuselage or boat hull its cross-sectional shape. The actual "skin" is in the form of fairly short panels, riveted at each end to the flanges of the "rings" or formers, and in certain localities to the fore and aft members as well. In a fuselage of approximately streamline form this type of construction is simplicity itself, as the rings are of simple shape and the panels of the skin require no "beating." In a shape like a flying-boat hull, where the change from almost flat sides to curved chine and thence to curved planing bottom, calls for reversed curvatures, the problem is not quite so simple, but in the hull of the new "Calcutta" the lines have been simplified to some extent, so that the amount of panel beating required is relatively small. Thus even in a comparatively difficult shape like a flying-boat hull, the Short system of metal construction has a very great deal to recommend it from the point of view of rapid production.

In the matter of wing construction, also, Short Brothers have been doing some very interesting research and experimental work, with the result that wing spars of Duralumin, of the crinkled strip type, can now be produced rapidly and comparatively cheaply. The plant for producing these spars was described and illustrated in *FLIGHT* of August 26, 1926, as was also a representative spar (that of the little Short "Mussel" light seaplane). If we add that recently Short Brothers have installed at their Rochester works an extensive plant for anodic treatment of Duralumin to protect it against corrosion, and recall that this firm has its own water tank in which models of hulls, floats, etc., are tested, it will be realised that few firms could be better equipped to tackle the not easy task of producing all-metal flying boats for the Empire air routes.

As regards the Short "Calcutta" flying-boat, two of which are now coming through the works, the general arrangement

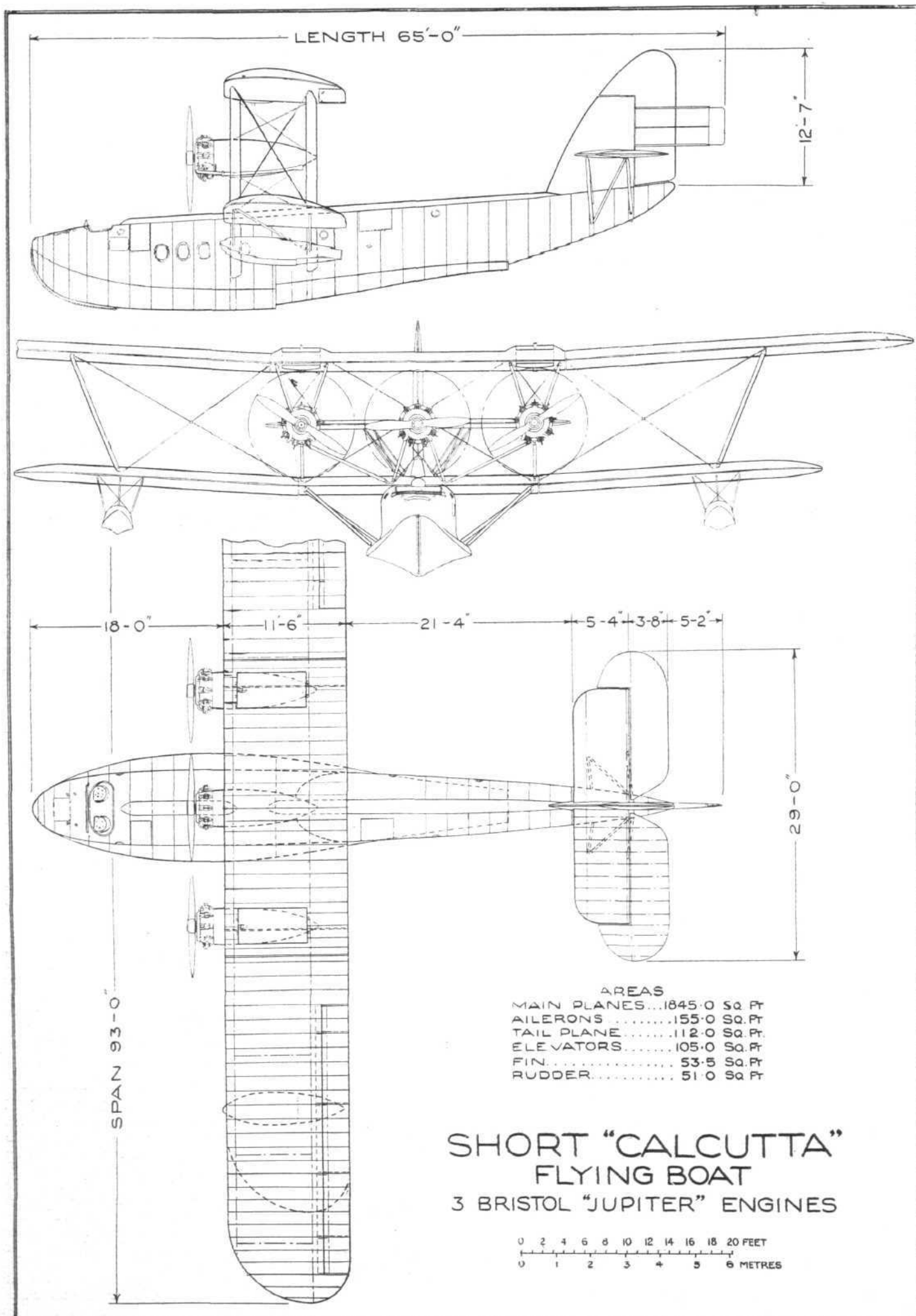
drawings will show this to be a large flying-boat of modern design in the matter of hull shape, surmounted by a fairly normal wing structure, and with a somewhat unusual arrangement of its engines. These will be Bristol "Jupiters," and will, it will be seen, be enclosed in streamline nacelles. The front elevation shows the "Calcutta" to be of very clean lines for a three-engined machine. The hull is of the two-step type, and has been developed from extensive work on models in the tank. Tests indicate that the new hull should be of very low resistance, very clean running, and have no tendency to "porpoise." Its constructional detail features may not be described at the moment, but the construction generally follows that of previous Short metal hulls, with such minor improvements as experience has shown to be desirable. Among the advantages of the all-metal hull perhaps one of the most important is that of freedom from water soakage, which may be a serious item in a wooden hull and may amount in some cases to several hundred pounds. Furthermore, it is claimed that the Short form of hull construction actually gives a structure which is lighter, size for size and strength for strength, than a wooden hull, quite apart from the question of water soakage. Long experience with metal hulls and metal floats has shown that the corrosion problems are not as serious as was at one time thought to be the case, and the makers of the "Calcutta" are confident that with reasonable care a Duralumin hull will last for many years, if properly treated during manufacture and subsequently during use.

The passenger accommodation of the "Calcutta" will be unusually comfortable, and owing to the placing of the lower plane above the hull, and the provision of large windows, the view from the cabin will be practically unobstructed laterally and diagonally downwards. The 15 seats are arranged in three rows of 5 each, and access to the cabin will be by a hatchway that can be reached from a landing stage or from a motor-boat. The cabin is to be heated from the engine exhaust pipes, and a carefully considered ventilation arrangement is provided. Provision is to be made for a small bar in the cabin where light refreshments will be obtainable, this being considered necessary in view of the fact that the machine is designed for a range of over 500 miles. Aft of the cabin is a lavatory, and behind that again a large luggage compartment, which has a separate hatch for loading and unloading.

The cockpit for the two pilots is in the nose of the hull, with two seats side by side and dual controls. There is ample room for one pilot to step down to the wireless compartment, which is on the starboard side, immediately aft of the pilot's cockpit. The machine is to be equipped with a particularly complete wireless outfit, including transmitting and receiving apparatus, direction-finding outfit of the Bellini-Tosi type, navigation equipment, &c., &c. The control cables to rudder, elevator, &c., run along the top of the hull in a duct so as to be entirely out of the way of the passengers.

The wing structure is, as already said, of the all-metal type, with the exception of the covering, which is fabric. The spars of corrugated strip construction, and the flanges are laminated so that where local concentrated loads occur they are given an adequate thickness. In order to avoid too sudden changes of section, the laminations have their ends forked and the edges bevelled. The ribs are Duralumin tubes arranged in the form of lattices. Ailerons are fitted to the top plane only.

The engine installation is shown in the general arrangement drawings. Inside the cowl of the central engine is a Bristol gas starter, which also drives the bilge pump, and, in an emergency, the general purpose generator, so that should the machine be compelled to alight on the sea it would still be able to send out wireless messages. The engines are provided with exhaust ring collectors and long tail pipes in order to reduce as much as possible the noise during flight. The petrol tanks, of which there are two, are housed in the top plane, whence the fuel is supplied by gravity feed to the three engines. Apart from the advantage which such a simple petrol system has in doing away with the necessity for petrol pumps, pressure gauges, etc., with liability to failure and breakdown, the placing of the tanks in the top plane, as far as possible removed from the hull, should make it possible for the passengers to smoke with perfect safety, the more so as the hull itself is of all-metal construction. What this



NEW THREE-ENGINED COMMERCIAL FLYING-BOAT: The Short "Calcutta" is an all-metal machine with accommodation for 15 passengers. General arrangement drawings, to Scale

will mean on a long flight of some five hours' duration can readily be imagined.

From experience with previous machines of somewhat similar type it is confidently expected that the Short "Calcutta" will be very stable, so that the pilot will not be fatigued by flights of long duration. It will be seen that a servo rudder is to be fitted. This rudder is a comparatively new invention, and has but recently been introduced on aircraft in this country. Several of the newer large machines now coming along are, however, to be so equipped, and as far as present experience goes the servo rudder enables a pilot to deal with very large rudder loads indeed. The action of the servo rudder is simple enough. The pilot operates the servo rudder, which in turn operates the main rudder.

We do not know who first thought of the servo rudder for aircraft, but in Germany Herr Anton Flettner, inventor of the Flettner "rotor," patented such servo rudders

for ships several years ago, and it appears probable that he also is the inventor of the servo rudder for aircraft, although it is gathered that considerable research on its use has been carried out at the Royal Aircraft Establishment at Farnborough. In the Short "Calcutta" a monoplane tail and single rudder is used, which is rather unusual for a large three-engined machine. We understand, however, that there is a probability of two smaller rudders being mounted above the tail plane, which may be used to correct any turning moment due to the failure of one of the wing engines.

The main dimensions and areas of the Short "Calcutta" are indicated on the general arrangement drawings. These may be supplemented by the following brief specification: Weight of machine fully loaded, 19,600 lbs. (8,920 kgs.). Paying load, 3,540 lbs. (1,610 kgs.). Maximum speed fully loaded, 105 knots = 121 m.p.h. (195 km./h.). Landing speed fully loaded, 46 knots = 53 m.p.h. (85.5 km./h.). Maximum range, 545 miles (878 km.).

Royal Air Force Flying Accident

THE Air Ministry regrets to announce that Flying Officer (Hon. Flight-Lieut.) Alastair Neil Macneal, the pilot of the

aircraft, and No. 362102 L. A. C. Cyril Arthur Overy, died of injuries on December 29, 1926, as the result of an accident at Ambala, India, to a Bristol fighter of No. 28 Squadron.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

RACING COMMITTEE

A MEETING of the Racing Committee was held on Monday, December 20, 1926, when there were present:—Lieut.-Colonel M. O. Darby, in the chair; Lieut.-Colonel W. A. Bristow, Major R. H. Mayo, Capt. C. B. Wilson, M.C., Mr. Howard T. Wright, and the Secretary.

The Committee considered the racing programme for 1927. It was decided to concentrate on a three-day meeting, during the August Bank Holiday week-end, the races to include the King's Cup and Grosvenor Challenge Cup.

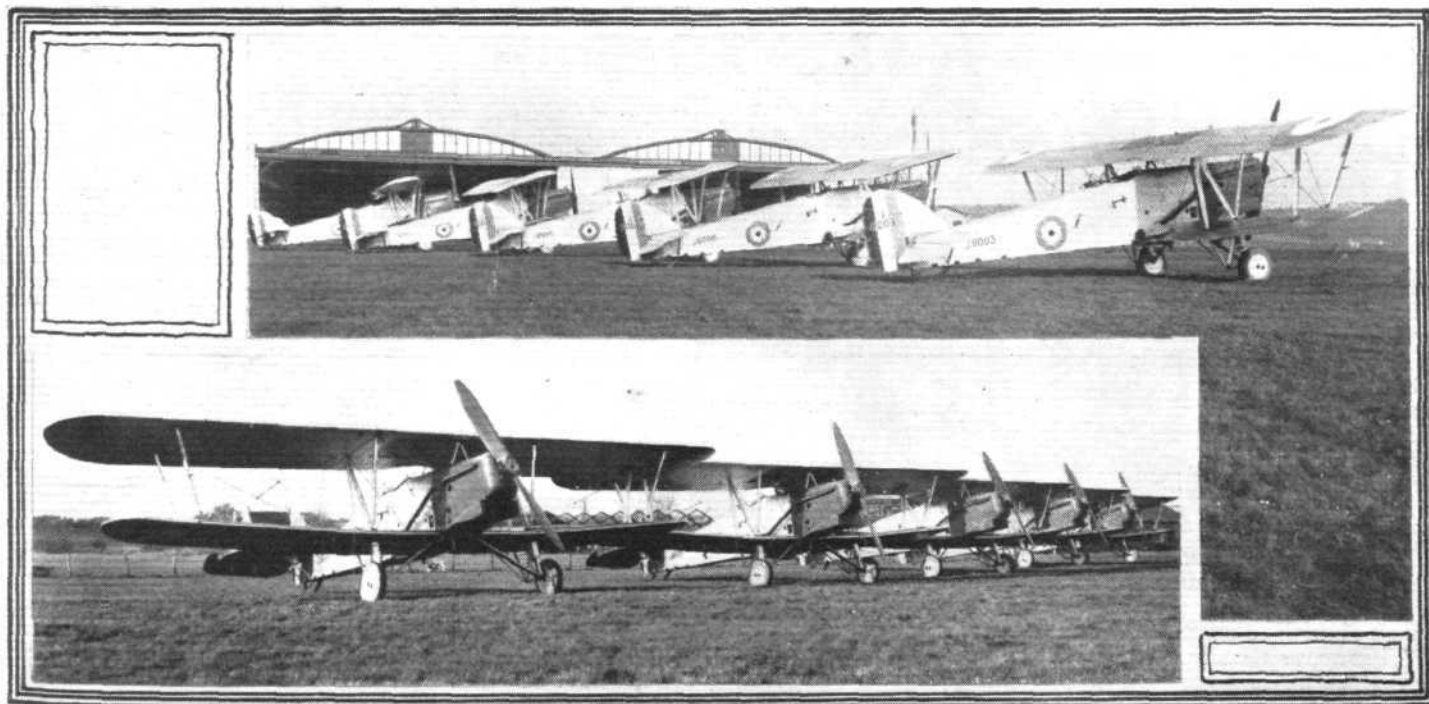
The possibility of holding these races from Bournemouth was considered. The expert reports on the aerodrome on the racecourse and the surrounding districts were submitted, together with the proposals of the racecourse company to take down the fencing and jumps and to acquire additional

land to increase the alighting area. These proposals are now under consideration.

Death of Mr. E. B. Parker

MEMBERS will have heard with deepest regret the death of Mr. E. B. Parker on December 28, 1926. Mr. Parker was attached to the R.N.A.S. from the Navy during the war, and afterwards was the London representative of Messrs. Short Bros. The funeral took place at Merstham on December 31, 1926, and amongst those present were Commander R. B. Davis, V.C., Major S. V. Sippe, D.S.O., Mr. Oswald Short, and Mr. H. E. Perrin.

Offices: THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W. 1.
H. E. PERRIN, Secretary.



QUANTITY PRODUCTION: A few of the Hawker "Horsley" bombers with Rolls-Royce "Condor" engines ready for delivery to their squadrons. The machines are here seen outside the Hawker sheds at Brooklands.

THE R.A.F. CAIRO-CAPE FLIGHT

Official Report on the Big 14,000-Mile Flight

THE official account of the Royal Air Force flight from Cairo to Cape Town and back, which took place last summer, has just been issued. This report, as it stands, would fill some 14 columns of *FLIGHT*, and with the present pressure on our space we are unable to publish it in full, in spite of the fact that it makes most interesting reading, and is at the same time an historic record.

In previous issues of *FLIGHT*, however, we have given particulars of this flight from start to finish, including a special article (in our issue for June 24 last) on the occasion of the arrival of the airmen in this country. We propose, therefore, to give this week a necessarily brief résumé of the official report referred to above, including only the more interesting items contained therein.

To begin with, it should be pointed out that this flight of four R.A.F. machines from Cairo to the Cape and back to England was purely a service flight carried out in the ordinary course of R.A.F. training, and no attempt was made to break records. The object of the flight was to visit the Dominion of South Africa and the various colonies en route; to gain experience in long-distance flying in formation, keeping to a scheduled time-table, and so to test the regularity with which reinforcements can be despatched by air, to gain experience in flying through changing climates and conditions, and over new country, to co-operate with local forces stationed in close proximity to the route followed, and last but not least, to visit the South African Air Force.

The route of the flight was practically the same as that organised by the R.A.F. in 1919, and followed by Sir Pierre Van Ryneveld on the Vickers "Silver Queen" machine in 1920. It was divided into three sections—Northern, Central and Southern. The Northern Section was organised by the Middle East Command, R.A.F., and stretched from Aboukir to Nimule. The Central Section, for which an R.A.F. officer with one N.C.O. and three airmen was responsible, lay between Jinja (Uganda) and Abercorn (N. Rhodesia). The Southern Section, for which another R.A.F. officer and two airmen were detailed, commenced at N'Dola (N. Rhodesia) and finished at Cape Town.

The flight was to be composed of four aeroplanes (Fairey 111 D land planes with Napier "Lion" series V engines). A spare aeroplane, two spare engines and spares were sent to Aboukir; a spare aeroplane, two spare engines and various spares were dumped at Kisumu (Lake Victoria); and a spare aeroplane, four spare engines and appropriate spares were to be dumped at either Cape Town or Pretoria. Thus a total of seven aeroplanes and 10 engines were allotted for the flight. (Note, the whole flight was completed without any change of machine or engine.)

On November 6, 1925, the flight formed at Northolt under the command of Wing Commander C. W. H. Pulford, O.B.E., A.F.C., but was not complete with personnel until December 1. In addition to the leader, the personnel engaged in the flight were:—Flight-Lieuts. P. H. Mackworth, D.F.C. (Pilot); E. J. L. Hope, A.F.C. (Pilot); L. E. M. Gillman (Navigation); Flying Officers W. L. Payne (Pilot); A. A. Jones (Technical); Sergts. Hartley (Fitter); and Gardener (Rigger).

At Northolt tests and practice flights were carried out as well as the preparation of the final lists of equipment, checking of same, etc., etc. The natural tendency when preparing lists of equipment is to try and take everything so as to be prepared for any eventuality. It is recognised, however, that if an engine is to last the aeroplane must not be overloaded—and as Wing-Com. Pulford said, "If you carry a lot of spares you will want them; if you don't you won't feel their need." The weight of equipment that could be carried was 450 lbs. per machine.

Wireless was not carried for the following reasons:—(a) It was heavy. (b) It would be of no value in Central Africa. (c) It required a skilled operator to send and receive signals and to look after the set.

After dealing with the final preparations for the flight the report gives the following narrative by Wing-Com. Pulford:—

"I suppose that there are few countries more interesting to visit than Africa, nor is there, I imagine, a more delightful way of doing so than by air.

"Within the space of six weeks we were able to see such world famous sights as the Pyramids at Ghizeh, the Aswan Dam, the source of the Nile at Jinja, the game reserves in

Kenya, the Victoria Falls at Livingstone, the Mattoppos Hills at Buluwayo, the diamond mines of Pretoria and Kimberley, and Table Mountain with the blue Atlantic stretching far beyond it.

"Any attempt however, to describe such a flight in detail would, I consider, be a very long and arduous task, added to which anybody who tried to read such a report would either fall asleep from sheer boredom or give it up in despair.

"Had there been any mishaps there might have been something to write about, but as it happened, from start to finish everything ran perfectly. The ground organisation was so thorough that all we had to do was to get in at one place and out at another and that was all there was in it.

"The strenuous period and the one which gave most work and anxiety was the preparation for the flight. There was so much which had to be provided for and every detail had to be gone into; but once all preparations were complete the actual flight was easy."

The flight started from Heliopolis at 0710 hrs., March 1, and finished there at 0835 hrs. on May 27, one day ahead of schedule. The total flying time for the four machines for the flight to the Cape and back to Cairo was approximately 568 hrs. The actual time between Cairo and return for the leader's machine was 140 hrs. 55 mins.—68 hrs. 21 mins. outward and 72 hrs. 34 mins. return.

During the whole flight very little trouble was experienced beyond having to replace one magneto, two air screws and all the oil tanks; no major repairs were necessary. The reliability of the engines and aeroplanes, says the report, was no doubt a great factor in determining whether the flight kept to time-table or not. But it was also very largely due to the efficient ground organisation prepared by the parties of R.A.F. personnel that had been sent in advance.

The rest of the report is devoted to a detailed log of the flight, a brief résumé of which, with outstanding items of interest included, follows:—

Outward Flight

1st Stage, March 1-3.—Cairo-Assiut (220 miles). Assiut-Aswan (260 miles). Time, 4 hrs. 57 mins. [The routine on landing at the end of a stage adhered to during the flight is described here.—Immediately on landing and whilst taxiing in, R.A.F. ensigns were hoisted; they were not kept flying in flight owing to the heavy wear and tear. Air intake plugs aircrew, engine, cockpit and compass covers were immediately put on. The aeroplanes were then pegged down and flying controls secured. Where the ground was too hard for screw pickets heavy weights such as full oil or petrol drums were used instead. The usual practice was to peg down with one picket to each wing tip, one to the air screw, and one to the tail, the camber gear being wound down to normal. In localities where there was any likelihood of rain all petrol tank air vents were plugged in order to prevent water getting in. Refuelling and routine inspections were then proceeded with.]

2nd Stage, March 3-4.—Aswan-Wadi Halfa (185 miles), Wadi Halfa-Atbara (350 miles). Time, 5 hrs. 46 mins. [This section very monotonous, nothing to be seen but sand or rocky jebels (hills).]

3rd Stage, March 4-6.—Atbara-Khartoum (175 miles). Time, 2 hrs. 27 mins. [Flight had to return to Atbara shortly after leaving owing to leaky petrol sight glass in one machine. Sir Alan Cobham landed at Khartoum on Mar. 5, and the leader took the opportunity of obtaining his opinion of the various aerodromes en route.]

4th Stage, March 6-8.—Khartoum-Kosti (175 miles). Time, 2 hrs. 25 mins. [Flight left shortly after Cobham departed for Khartoum. Visibility very bad. Enthusiastic reception at Kosti. Decided to stay a day at Kosti owing to bad weather report.]

5th Stage, March 8-10.—Kosti-Malakal (260 miles). Time, 3 hrs. 53 mins. [Visibility still bad. At Malakal the Shilluks armed with spears and shields gave a war dance in honour of the Flight. Malarial district now reached—Flight started taking daily quinine.]

6th Stage, March 10-12.—Malakal-Mongalla (350 miles). Time, 3 hrs. 54 mins. [Visibility bad, not much of country could be seen—very monotonous. Hot and muggy at Mongalla, even at night.]

7th Stage, March 12-13.—Mongalla-Nimule (124 miles). Time, 1 hr. 32 mins. [Originally intended to fly to Kisumu,



but magneto trouble caused delay, and on reaching Nimule it was too late to proceed. Crews slept in hammocks for first time.]

8th Stage, March 13-17.—Nimule-Kisumu (320 miles). Time, 3 hrs. 43 mins. [Before leaving Nimule, Chief of Village indicated—in dumb show—that he remembered the arrival of the "Silver Queen." Visibility increased from 1 mile to 50 miles.]

9th Stage, March 17-19.—Kisumu-Mwanza (240 miles). Mwanza-Tabora (185 miles). Time, 4 hrs. 38 mins. [When leaving Mwanza (on 17th) two of the machines were bogged in soft ground up to the axles, and freeing them delayed the start considerably.]

10th Stage, March 19-21.—Tabora-Abercorn (300 miles). Time, 3 hrs. 13 mins. [Thick forest existed practically all the way to Tanganyika, and a forced landing without damage would have been impossible.]

11th Stage, March 21-23.—Abercorn-N'Dola (342 miles). Time, 4 hrs. 11 mins. [Near Bangweulu they saw a wall of heavy rainstorms ahead, and had to alter course to dodge them, and as a result had slight difficulty in locating N'Dola.]

12th Stage, March 23-25.—N'Dola-Broken Hill (104 miles). Time, 1 hr. 21 mins. [Thick forest over this stage.]

13th Stage, March 25-29.—Broken Hill-Livingstone (303 miles). Time, 3 hrs. 21 mins. [A good deal of cloud encountered, necessitating flying at about 9,000 ft.]

14th Stage, March 29-31.—Livingstone-Bulawayo (243 miles). Time, 3 hrs. 6 mins. [Bumps encountered, partly due to nature of ground and partly to clouds. Flight visited Matoppos Hills to see Cecil Rhodes' and Sir Starr Jameson's graves.]

15th Stage, March 31-April 2.—Bulawayo-Palapwe Road (200 miles). Time, 2 hrs. 31 mins. [No difficulty experienced in taking off, as experienced by other pilots. At request of Tshkedi Khama, Regent of Bechuanaland, Flight flew over Serowi, the capital, on April 1.]

16th Stage, April 2-5.—Palapwe Road-Pretoria (232 miles). Time, 2 hrs. 43 mins. [Had to fly low when crossing over the tops of a range of hills, and dodge about considerably—at one moment barely missing tree-tops, and the next moment passing over a precipice 600 ft. or so deep. Flight met at Pretoria by Gen. Brink, Col. Sir van Ryneveld, and Mayor.]

17th Stage, April 5-8.—Pretoria-Johannesburg (35 miles). Time, 1 hr. 1 min. [Escorted by 14 aeroplanes of S.A. Air Force and the spare Fairey IIIb, the latter giving "joy-rides" to the Mayor and other influential members of the community during the stay at Johannesburg.]

18th Stage, April 8-11.—Johannesburg-Bloemfontein (227 miles). Time, 2 hrs. 42 mins. [On landing at Bloemfontein one machine developed a leaky oil tank, and a spare tank from Pretoria was installed. A good deal of rain was encountered during the stay.]

19th Stage, April 11-12.—Bloemfontein-Beaufort West (304 miles). Time, 3 hrs. 37 mins. [Country flat and open to Jagersfontein, then becomes more broken up.]

20th Stage, April 12-19.—Beaufort West-Cape Town (266 miles). Time, 3 hrs. 41 mins. [Machines climbed to 11,000 ft. above sea level to clear tops of the Drakensburg Mts. Whilst crossing the range the new oil tank installed at Bloemfontein split, and the pilot climbed above the others in order to have more time to select a landing ground should the engine seize. The oil pressure held, however, so the pilot opened to full throttle and dived at full speed into Wynberg, arriving there some 20 mins. ahead of the others. A firm in Cape Town, therefore, made four new 20-gauge copper tanks, which were installed in the four machines and gave no further trouble throughout the return flight. On landing at Wynberg the Flight was received by the Minister of Defence, the Chief of the General Staff, and the Mayors of Wynberg and Cape Town.]

Next week we will deal with the return flight.

(To be concluded.)

NEW YEAR HONOURS

It is announced in a Supplement to the *London Gazette* that H. M. the King has signified his intention of conferring the following New Year Honours:—

Baron

Sir Charles Greenway, Bart., Chairman of the Anglo-Persian Oil Co., Ltd.

C.B. (Military Division)

Group-Capt. Charles Stuart Burnett, C.B.E., D.S.O., R.A.F.

C.B. (Civil Division)

Henry Thomas Tizard, Esq., A.F.C., F.R.S., Principal Assistant Secretary, Department of Scientific and Industrial Research.

PROMOTIONS AND AWARDS

The Air Ministry announces:—

The undermentioned are promoted with effect from January 1, 1927:—

General Duties Branch

Air Chief Marshal to be Marshal of the Royal Air Force.—Sir Hugh Montague Trenchard, G.C.B., D.S.O.

Squadron Leaders to be Wing Commanders.—Evelyn Hayley Sparling, A.F.C.; Frederick Charles Victor Laws, O.B.E.; William John Ryan, C.B.E.

Flight Lieutenants to be Squadron Leaders.—Richard Burnard Munday, D.S.C., A.F.C.; John Callaghan Brooke, D.S.C.; William Ewart Reason; George Raymond Albert Deacon, M.C.; Loudoun James Maclean, M.C.; Walter Henry Park, M.C., D.F.C.

Flying Officers to be Flight Lieutenants.—James Cornelius Stevens; Raymond de Lacy Stedman; Alan Jerrard, V.C.; Alexander Arthur Clarendon Hyde; James George Western, M.B.E.; David Stewart Allan; Samuel Lewis Hope Potter; Anthony Leach, M.C.; Leon Martin; Alfred Randles Wardle; Joseph Claude Andrews, M.B.E.; David Forgham Anderson, D.F.C.; Cyril Douglas Spiers; Edward Morton Drummond; George McCormack; Frederick Laurence Pearce; John Frank Clark; Herbert George Rowe; Lewin Bowring Duggan; Cyril Rapley; Robert Hugh McCoubrie Sheppard; Bernard Thomas Hood; Reginald Jones; John Watson Jean, D.S.M.; Robert Dawlas McEwan Hart; George Stewart Taylor; John Augustine Elliott; James Wright Lissett; Edward Arthur Blake, M.M.; Harold Alfred Haines, D.F.C.; Charles Henry Flihn; Thomas George Bird; David D'Arcy Alexander Greig, D.F.C.; Henry Frederick Vulliamy Battle; Cyril Douglas Adams; Edward Dayrell Handley Davies; John Richard Wolley; Donald Malcolm Fleming; Fred Kirk; Stephen McKeever; Eric Ralph Carrington Hobson, D.F.C.; William Edmund Purdin; John Alexander McDonald; Barnabas Henry Cross Russell; Robert Ritchie Greenlaw, M.B.E.

Stores Branch

Wing Commander to be Group Captain.—George Laing, O.B.E.

Squadron Leaders to be Wing Commanders.—Rudall Woodliffe Thomas, O.B.E.; Ephraim William Havers.

Flight Lieutenants to be Squadron Leaders.—William James King, D.C.M.; Edwin Maurice Cashmore; Frederick Petch, O.B.E.; Walter Thorne.

Flying Officers to be Flight Lieutenants.—Charles Joseph Polden; Harry Frederick Webb; Clarence Tremaine Davis; Herbert James Payne; Harry Bartlett Hawker; Wallis St. John Littlewood; John Roland Gardiner; William Liniker; Robert George Gore; George Baker.

Accountant Branch

Squadron Leaders to be Wing Commanders.—Arthur Geoffrey Nevill Belfield; James Leask Robertson.

Flight Lieutenant to be Squadron Leader.—Cecil Cornelius James Croydon. *Flying Officers to be Flight Lieutenants.*—John Freeman-Fowler; James Michie Adams; Edward Vernon Humphrey.

Medical Branch

Squadron Leader to be Wing Commander.—Harold Burnet Porteous, M.B., D.P.H.

Legal Branch

Flight Lieutenant to be Squadron Leader.—Donald Lane Ingpen.

Director of Music

Flying Officer (Hon. Flight Lieutenant) to be Flight Lieutenant.—John Henry Amers, M.B.E.

Princess Mary's Royal Air Force Nursing Service

Acting Matrons to Matrons.—Senior Sister Miss Muriel Beatrice Botwood; Sister Miss Katherine Christie Watt.

Senior Sisters to acting Matrons.—Miss Maggie Moddrell; Miss Emily Mathieson Blair.

Sister to Acting Senior Sister.—Miss Winifred Eveline Molesworth.

ROYAL AIR FORCE—AWARDS

The Air Ministry announces:—

The King has been graciously pleased to approve of the following awards to the undermentioned officers and airmen of the Royal Air Force:—

Awarded the Air Force Cross

Flight Lieutenant Louis Massey Hilton, D.F.C.

Flight Lieutenant Matthew Crawford Dick.

Awarded the Air Force Medal

83298 Sergeant (Pilot) Herbert Myles.

157816 Corporal Arthur East.

330341 Leading Aircraftman Robert Edward Barton.

327585 Leading Aircraftman Stanley George Wright.

The King has been graciously pleased to approve of the award of the Royal Red Cross, First Class, to Miss Mary Wilson Campbell, late Matron, Princess Mary's Royal Air Force Nursing Service, in recognition of the exceptional devotion and competency displayed by her in the nursing and care of the sick in Air Force Hospitals at Home and in Iraq.

Khartoum-Kisumu Seaplane Damaged

MISFORTUNE has soon overtaken the D.H. seaplane "Pelican," which only recently arrived at Khartoum for use on the air service between that town and Kisumu in Kenya. On December 30 last the machine was about to start off for a test flight from the Nile, but before it left the water it suddenly plunged nose first into the river. Pilot and passenger were rescued unhurt, after a brief inspection

of the bed of the Blue Nile, and the damaged seaplane was brought ashore. An examination disclosed serious damage to the port float, the bow of which was stove in and ripped open. There is little doubt that the machine must have struck some submerged object when taxying along the water. We understand that a fresh float—or parts—will have to be obtained from England before the damage can be repaired.



AIRISMS FROM THE FOUR WINDS.

Sir Samuel Hoare's Flight to India

THE D.H. "Hercules," carrying Sir Samuel Hoare, Lady Maud Hoare, Air Vice-Marshal Sir Geoffrey Salmond and party to India, on the inaugural flight of the Cairo-Karachi Imperial Air Route, has been making good progress since it left Croydon on December 27 last. So far the flight has been accomplished according to the pre-arranged schedule (which was published in last week's *FLIGHT*), in spite of bad patches of weather *en route*, and high praise is accorded the pilot, Capt. F. L. Barnard, and navigator, Sq.-Ldr. E. L. Johnson. The flight was resumed from Marseilles at 7.40 a.m. on December 28, arriving at Naples at 3.48 p.m. (G.M.T.), having made a stop for lunch at Pisa and a brief halt at Capua. Visibility was bad at the start, but along the Riviera the weather was fine as far as Genoa, after which fog and rain were encountered. At Naples they were received by the acting Consul-General, the British Air Attaché in Rome, and representatives of the Italian military, naval and air forces, before a large crowd. In the evening they were entertained, as guests of the City of Naples, at a banquet presided over by General Capuzzo. Bad weather was again experienced when the journey was resumed to Malta next day. Heavy rain squalls were encountered over the Mediterranean from Catania (Sicily), where a halt was made, but Malta was reached in safety, that afternoon. On December 30 the sea crossing from Malta to Khoms was successfully accomplished, the "Hercules" being escorted a part of the way by R.A.F. machines. Having lunched at Khoms, the journey was resumed to Benghazi. Unfortunately, Mr. Emmott, the photographer with the party, missed the machine at Malta and was left behind! Aboukir was reached on December 31, "according to plan," three Bristol "Fighters" of No. 208 Squadron meeting the "Hercules" *en route* and escorting it into the aerodrome. Sir Samuel Hoare was received by Air Vice-Marshal Webb-Bowen and a guard of honour of the R.A.F. The short stage from Aboukir to Ziza was completed on January 1, and the next day the 543-mile trip to Baghdad across the desert was safely accomplished, detours being made to fly over Babylon, Ctesiphon and Ur. A stop for lunch was made at Rutbah Wells, and at Baghdad the party was received by the High Commissioner, Sir Henry Dobbs, a representative of King Feisal, and a distinguished gathering. A banquet was held that night at which King Feisal was present. Sir Sefton Brancker joined the party at Baghdad, when he arrived on December 29. On January 3 the journey was continued to Bushire with a halt for lunch at Basra, from which place the "Hercules" was escorted by two R.A.F. machines. The ninth stage, Bushire—Lingeh—Jask, was completed without incident on January 4, the "Hercules" landing at Lingeh 15 mins. after the two D.H. "Moths" piloted by Stack and Leete of the Lancashire Ae. Club had passed overhead. It would seem, therefore, that by the time *FLIGHT* is in the hands of most of our readers the "Hercules" will have arrived safely at Karachi.

The "Moths" Progress

THE two D.H. "Moths" piloted by Capt. T. N. Stack and Mr. B. S. Leete, of the Lancashire Aero Club, left Bushire on January 4 at 3 a.m. and reached Bandar Abbas at 7.46 a.m. After a stop of about 3 hours they proceeded to Jask.

The Duke of York's Tour

WHEN the Duke and Duchess of York leave Portsmouth in H.M.S. "Renown" to-day, *en route* for Australia, four Supermarine "Southampton" flying-boats (Napier "Lions") will escort the warship down the Channel as far as the extreme south-westerly point of the Isle of Wight.

U.S. Army Pan-American Flight

THE five U.S. Army Loening amphibians, under the command of Maj. H. A. Dargue, which left Kelly Field, San Antonio, on December 21, on a tour round South America, reached Guatemala City on January 2.

French Madagascar Flight

LIEUT. BERNARD, one of the three French pilots who are engaged in a sort of aerial general post between France and Madagascar, arrived at Aboukir on or about December 31

on his way back to France from Madagascar. He is flying a Lioré-Olivier flying-boat fitted with a French Bristol "Jupiter" engine.

Air Survey of Saskatchewan

It is reported from Ottawa that plans are now far advanced for a comprehensive geological survey of Saskatchewan, with the object of developing the latent mineral wealth in Northern areas. Huge stores of petrol and oil have been, and are being, placed at convenient spots in the north country, ready to supply two specially constructed seaplanes which will start as early in the spring as possible in the making of aerial maps. Already a three-year programme has been mapped out for these machines. The object of the aerial survey will be to pave the way for the geologists, who will work immediately behind the map-makers. The geologists will locate the mineralised areas, and then the prospectors will be in a position to enter and locate the minerals.

Venice-Vienna Air Line

Good progress has been made with the Venice-Vienna air service since it commenced operations on Aug. 18 last. From this date up to December 15 last, 172 flights have been completed, and 71,000 kms. (44,000 miles) flown; 516 passengers, and 15,078 kgs. (22,247 lbs.) of freight and mail have been carried. An efficiency of 98 per cent. has been maintained. This service is continued during the winter with remarkable regularity—without any schedule or route alterations—in spite of the fact that weather conditions generally are unfavourable in the winter, especially in the Alpine zone and over the Semmering chain, where machines have to fly above 4,000 m. (13,120 ft.).

A Rome-Berlin Air Service

DURING next March experimental flights will be made on the proposed Rome-Berlin air line. For operational purposes this line will be divided into three sections. From Rome to Milan it will be operated entirely by Italian personnel and machines; between Milan and Munich by German and Italian personnel together; and between Munich and Berlin, entirely by German personnel.

Seine-Thames Service Again

ONCE again it is proposed to inaugurate an air service, starting this January, between Suresnes on the Seine and Westminster on the Thames. This service will be operated by the French Air Union, with a Lioré and Olivier flying-boat (the same type which flew successfully to Madagascar) fitted with a "Jupiter" engine.

New Italian World's Records ?

It is reported that the Italian pilot Passaleva has established new world's records during a flight of 1,000 kms. at Serto Calende recently, incidentally bettering several of his previous records. His seaplane carried a load of 2,000 kgs., and Passaleva claims to have set up new speed records for a seaplane carrying loads of 500, 1,000, and 2,000 kgs.

Fatal Air Collision in America

TWO U.S. Army aeroplanes came into collision when flying over Chanute Field, Rantoul, Ill., on December 22, and as a result, four airmen lost their lives. The machines collided head-on at an altitude of about 400 ft., and caught fire at the moment of impact.

Mooring Masts for Canada and South Africa

THE Governments of Canada and the Union of South Africa have both formally asked for the help of British experts regarding the erection of airship mooring masts in their respective Dominions, as suggested by Sir Samuel Hoare at the last Imperial Conference. Expert advisers will, therefore, visit these Dominions early this year, in order to discuss the various problems connected with the choice of sites, construction and erection, etc., of the masts.

A Record Glide ?

DR. E. CATTANCO, a member of the Students' Gliding Club of the Pavia University, Italy, claims to have established a world's record for a gliding flight in a straight line. Starting from the top of Campo Mountain, he glided downwards to the Olona Valley, covering a distance of 7½ miles in 16 minutes.

THE NAPIER "LION" SERIES 8

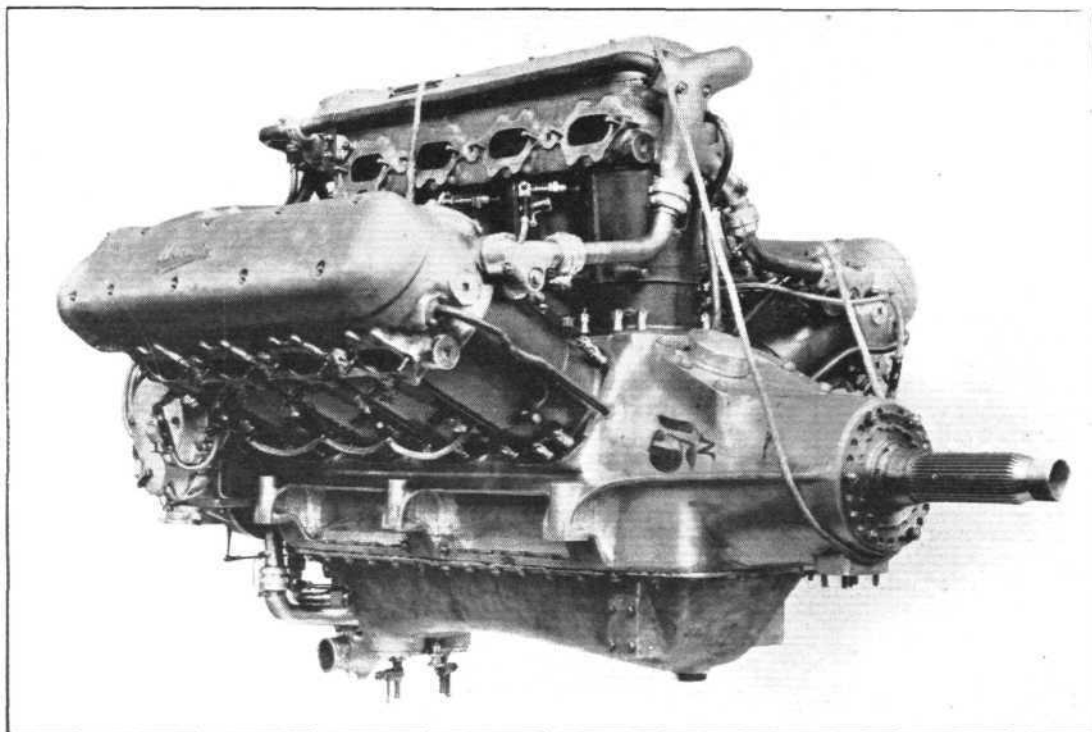
The Latest, Direct Drive, Model

PARTICULARS have just come to hand of the latest product of the famous aero engine firm of D. Napier and Son, Ltd., of Acton. This is the Napier "Lion" Series 8, a direct drive version of the well-known and successful "Lion," with reduction gear, that has achieved such a remarkable reputation for reliability and efficiency during the last few years.

respectively. The normal rating is 525 b.h.p. at 2,350 r.p.m., and the average actual power is 543 b.h.p. at 2,350 and 567 b.h.p. at 2,585 r.p.m.

The weight of the engine is approximately 920 lbs., complete with airscrew boss, carburettors, induction pipes, and hand-turning gear, subject to a plus tolerance of 10 lbs. Thus

The Napier
"Lion" Series 8:
Three-quarter
front view of the
new direct-drive
aero engine.

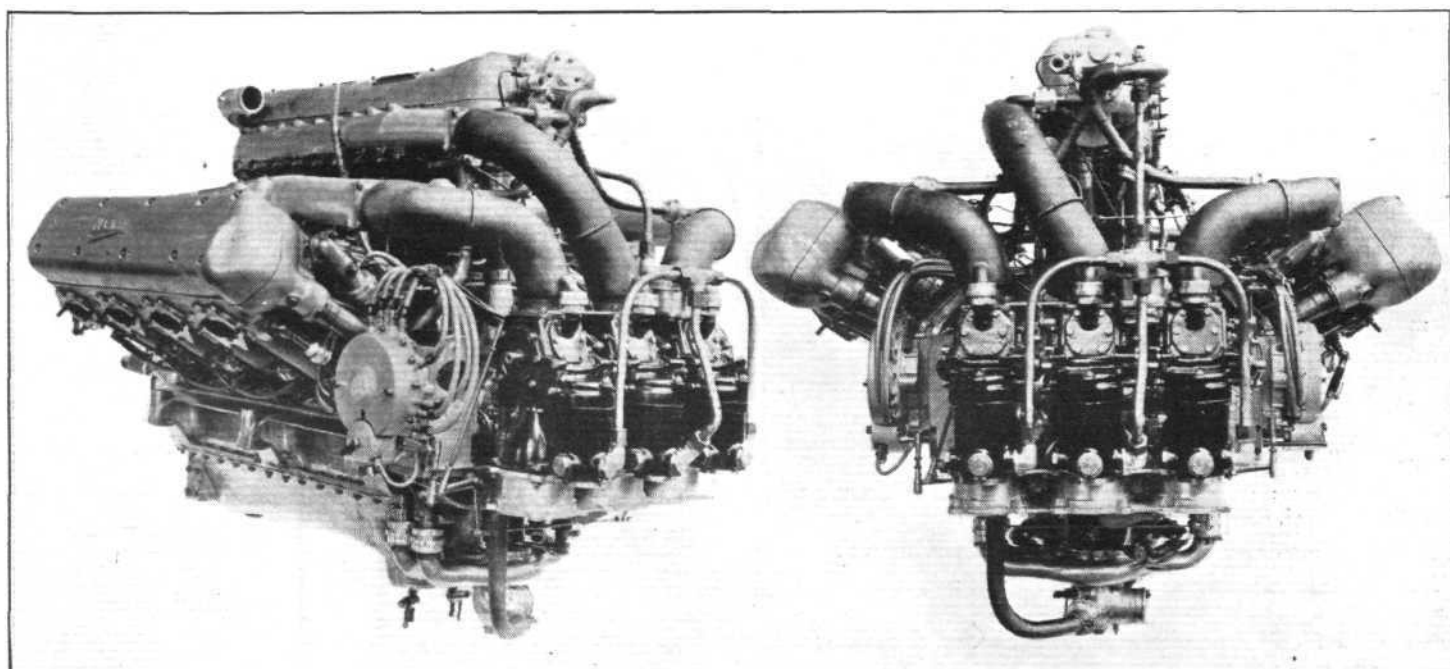


The new Series 8 model embodies all the main characteristics of the previous "Lions," and differs—apart from having direct drive for the airscrew—only in a few minor details. Constructionally, the "8" is virtually the same as before, and the original "broad arrow" formation is retained; we need not, therefore, do more here than just briefly enumerate the main characteristics of this engine.

It has 12 cylinders, in three blocks of four (one vertical and two at 60°), having a bore and stroke of 5½ ins. and 5½ ins.

the weight per horse-power, on normal power, comes out at 1.75 lbs. per horse-power, or on average power at 2,585 r.p.m., 1.62 lbs. per horse-power.

It will be noticed from the accompanying illustrations of the Napier "Lion" 8, that all "accessories," such as magnetos, carburetors, pumps, etc., are now located together at the rear end of the engine, and that owing to the absence of the reduction gear the front end is much cleaner and not so "blunt," which should help in obtaining efficient streamlining



THE NAPIER "LION" SERIES 8: Three-quarter rear, and side views, showing the carburetors, magnetos, pumps, etc.

in the cowling; the axis of the airscrew shaft is, also, lower down.

The cylinders of the "8" are, as before, steel forgings machined all over, with steel water jackets and detachable aluminium cylinder head blocks containing inlet and exhaust passages, valves and valve actuating mechanism. The pistons are of aluminium alloy, fitted with two gas and two scraper rings. Hollow gudgeon pins of large diameter are provided fixed in steel bushes.

There are two inlet and two exhaust valves per cylinder, each fitted with two coil springs and operated direct by overhead camshafts driven through bevel gearing by vertical shafts from the crankshaft (at the rear end). The whole of the valve mechanism is enclosed within a detachable aluminium case.

The connecting rods are machined from special high grade steel; the master rod, coupled to the pistons of the vertical block of cylinders, is formed with lugs on either side, to which are attached the short auxiliary rods for the pistons of the right and left groups of cylinders. The big ends are white metal lined, and the anchor pins and other parts work in bushes of ample size.

Machined from a solid steel forging, the crankshaft has its four throws in one plane, and all journal bearings are of large diameter and bored out. The forward end is extended to carry the airscrew boss. The shaft is carried in six substantial roller bearings and a thrust ball bearing is provided to take the thrust of either a "Pusher" or "Tractor" airscrew. The direction of rotation of crank and airscrew is anti-clockwise viewed from front.

The crankcase and oil sump is of aluminium suitably stiffened at all necessary points, and having arms on either side for attachment to the aircraft engine mounting. The crankcase rear end cover contains the two scavenge pumps, the pressure oil pump and the drive for the camshafts, magnetos, water and oil pumps. The water pump is of the centrifugal type, mounted at the rear end of the engine and running at crankshaft speed. Its spindle is fitted with a gland and

a screw-down greaser. Water is delivered through a separate outlet to each of the three cylinder blocks.

There are three oil pumps, two suction and one pressure type, driven at half engine speed through gears. The suction pumps are connected to the sump, and the pressure pump takes oil from the supply tank through a suitable filter.

Lubrication is by pressure throughout to the big-ends, gudgeon-pins, and bearings of the camshaft. The cylinder walls and crankshaft bearings are lubricated by oil escaping from the big-ends and gudgeon-pins. The valve tappets and cams are lubricated by oil escaping from the camshaft bearings, which drains into the sump and is delivered thence to the supply tank by suction pumps. An adjustable pressure-relief valve is incorporated in the system.

Three single carburettors, Napier system, are provided, the bodies of which are of aluminium and water-jacketed. The gas-inlet pipes to the induction on the cylinder-heads are of steel, and also water-jacketed. Altitude-control cocks are fitted and are interconnected with the throttle control.

Ignition is by two special B.T.-H. 12-cylinder magnetos, rotating anti-clockwise, mounted on platforms at the rear end of the engine. Special distributors are fitted to facilitate starting by hand. Metal-braided ignition cables, carried in aluminium troughs, are employed for conveying the current to the sparking-plugs. Advance and retard links and levers are interconnected.

If required, the engine can be fitted with a gas distributor for use with the Bristol-type starter unit.

The oil consumption of the "Lion 8," taken on the Air Ministry two-hour endurance test, must be between 7 and 15 pints per hour. This consumption may also be stated as a maximum of 0.038 lb. per b.h.p.-hour on the two-hour test. The fuel consumption will not exceed 0.55 pints per b.h.p.-hour at full load and normal speed. This consumption is equivalent to 0.527 lb. per b.h.p.-hour with a fuel of specific gravity of 0.765.

The overall dimensions of the engine are: length to centre of airscrew, 5 ft. 1 in.; width, 3 ft. 6 ins.; height, 3 ft. 3 ins.

LIGHT 'PLANE CLUB DOINGS

London Aeroplane Club

The Club which was closed down for a week during the Christmas holidays, re-opened on December 31 last. For the week ending January 2, 1927, the flying during the three days amounted to 20 hrs. 35 mins.

The following members received flying instruction: L. C. Davey, B. Roxburgh Smith, J. J. Hofer, Miss Fletcher, Miss Spooner, E. J. B. King, J. H. Saffery, G. H. Saxon Mills, H. O. Guggenheim, C. G. Miesiegas, D. H. P. Esler, N. H. M. Watkins, H. Solomon, O. J. Tapper, E. G. Denton, A. R. Ogston.

The following members made solo flights:—O. J. Tapper, B. Roxburgh Smith, C. E. Murrell, G. Terrell, E. S. Brough, A. G. D. Alderson, H. Spooner, K. V. Wright, J. H. Saffery, A. R. Ogston, N. J. Hulbert, D. H. P. Esler, S. O. Bradshaw, G. H. Craig, N. H. Jones. Mr. C. D. Barnard and Mr. R. W. Reeve, the De Havilland Pilots assisted during the week with the flying instruction.

Joy rides were given to the following members:—Miss Terrell, H. J. Greenland, Mrs. Hunt, Miss Wilson, L. C. Davey, Dr. Cook, Mrs. Cook, C. H. Swann.

The total flying time for the month of December was 68 hrs. 30 mins. The total flying time for the six months ending December 31, 1926, was 863 hrs. 55 mins., made up as follows: Dual instruction, 441 hrs. 15 mins.; solo flights, 293 hrs. 50 mins.; joy rides, 55 hrs. 10 mins.; test flights, 73 hrs. 40 mins.

The total number of flights made during that period was 2,137.

Membership.—The membership of the club at December 31, 1926, was: flying membership, 209; associates, 105.

46 members hold the "A" licence and of these 30 have been trained entirely by the Club.

Club Equipment.—The Club has now four D.H. "Moths," and three spare engines. All the engines have been converted to dual ignition and have the strengthened crankcases.

Ground Engineer.—William Moss has been appointed Ground Engineer and started his duties on Saturday last.

Mr. S. L. F. St. Barbe continues to make good progress and has now left the Hendon Cottage Hospital.

Hampshire Aeroplane Club

Report for two weeks ending December 31, 1926:—The following members received instruction: Lieut. Heinemann, 1 hr.; Everett, 50 mins.; Shepherd, 40 mins.; Dickson, 25 mins.; Fry, 20 mins.; Southcliffe, 20 mins.; Stokes, 10 mins.; and Lieut. Gordon, R.N., 15 mins.

The following members had joy rides:—Miss Moves, Mr. Simmonds, Jr., Masters Fossey and Loveday. The last-mentioned are two of Commander C. B. Fry's "Mercury" boys, who received their flights as prizes in connection with their training.

The soloists were:—Messrs. Simmonds, 1 hr. 35 mins.; F/O. Mellor, 1 hr.; Preston, 45 mins.; Fry, 30 mins.; Bowen, 10 mins.; Rumble, 20 mins.; and Keeping, 15 mins.

Total flying time, 10 hrs. 35 mins. Instruction flying, 4 hrs. Passenger flying, 2 hrs. Solo flying, 4 hrs. 35 mins.

It is less than five months since the club received its two "Moths" and

now, at the commencement of a new year, it is interesting to look back and review what has been accomplished in those few months. Over one thousand separate flights have been made, many of them involving five or six landings; 164 solo flights have been carried out by club members, eight pupils who had never previously flown an aeroplane have been taught to fly, and are now flying solo, and lastly, our chairman, Mr. O. E. Simmonds, has qualified for his "A" licence.

As previously reported, a dinner was held early in December, and the club house establishment fund which was opened at that function has steadily grown to over £500 total. Sir Charles Wakefield, with his usual generosity and air "mindedness," has subscribed £250, and many other donations have been received. Amongst those who have come forward to help the club achieve its object of fitting up a really attractive country club house are the following:—

The President, Lord Louis Mountbatten, £50; Sir Charles Wakefield, £250; Commander J. Bird, £50; Air Vice-Marshal Sir Sefton Branner, £10; the Directors of the Supermarine Aviation Works, Ltd., £50; Lieut.-Col. R. E. Crichton, £5; Capt. Wilson, £5; Flight-Lieut. Crawford, £1; Mr. R. Bishop, £5; Mr. McKechnie, £2; Miss Manning, £2 10s.; F. O. Clarkson, £2 10s.; Mr. Waite, £1 1s.; Mr. Townsend, £5; Mr. P. Potts, £5; Mr. Taylor Matthews, £5; Mr. K. Lee-Guiness, £50; Mr. R. J. Parrot, £5 5s.

On Friday, 24th inst., Mr. Simmonds flew up to Croydon with Mr. Mansbridge as passenger to discuss engine topics with A.D.C.'s. In spite of a 30 m.p.h. head wind, and bad visibility, the trip was made in 90 mins. Unfortunately the engine was so moved at returning to its birthplace that the rear ball race cracked and an immediate operation was considered necessary. A.D.C.'s very sportingly tackled the job straight away, and by working overtime on Christmas Eve had the machine ready by Thursday morning, when Capt. Thomson collected it and flew it back to Hamble. We are indebted to the ball race for expiring when the club was closed down.

Newcastle-upon-Tyne Aero Club, Ltd.

Report for week ending January 2, 1927.—Total flying time, 16 hrs. 37 mins. (on "Moth"). Dual, 7 hrs. 45 mins., solo (Training) 1 hr. 5 mins., solo ("A") 6 hrs. 57 mins., Joy rides, 35 mins., tests, 15 mins., Avro, 1 hr. 40 mins.

Gales have again been the rule, otherwise a considerably larger amount of flying would have been completed, as there was a good attendance of members during the week.

The following members flew under instruction with Mr. J. D. Parkinson:—Mr. J. Stawart, Mr. F. L. Turnbull, Mr. J. M. Kennedy, and Mr. A. Bell.

Mr. J. D. Irving, Mr. J. M. Kennedy and Mr. H. D. Mathews flew solo.

The following "A" pilots flew with passengers:—Mr. R. N. Thompson with Mr. Thirlwell and Mr. Pike; Dr. H. L. B. Dixon with Mr. Robson; and Miss Howard, Mr. H. H. Leech, Lord Ossulston, Mr. C. Thompson, with Mrs. Heslop.

Mr. J. M. Kennedy was "launched" on the 27th, putting up a good show.

Mr. and Mrs. J. D. Irving very kindly presented an oil stove and carpet for the office, which are much appreciated. It is regretted that this was not acknowledged in a previous report.

Aero Golfing Society

At the annual meeting of the Society held at the Royal Aero Club on Thursday, December 30, 1926, the following officers were elected for the year 1927:—

President—Lieut.-Colonel J. T. C. Moore-Brabazon, M.C., M.P.; **Captain**—C. R. Fairey; **Hon. Treasurer**—Lieut.-Colonel Sir Francis K. McClean, A.F.C.; **Hon. Secretary**—Harold E. Perrin.

THE ROYAL AIR FORCE

London Gazette, December 28, 1926.

General Duties Branch

The following Pilot Officers are promoted to rank of Flying Officer:—J. A. Tindall; July 18. E. D. MacL. Hopkins; July 26. G. B. Collett; September 24. M. Brunton; October 31. D. W. Gibbon, G. N. Hoar; November 14. W. J. Kelly; November 30. B. B. Dowling, B. E. Moody, H. D. Gunton; December 13. Flight Lieutenant M. H. Coote is restored to full pay from h.p.; January 1, 1927; Flying Officer H. C. Bobbett is placed on retired list and is granted permission to retain rank of Sqdrn. Leader; December 29.

The following are transferred to Reserve:—

Class A.—Flying Officers, L. A. W. Deane; Dec. 28. R. L. Palmer. W. A. C. A. Yearsley; Dec. 29.

Class B.—Flight Lieutenant M. Ballard; Dec. 12.

Flying Officer H. S. Davidson is dismissed the service by sentence of General Court-martial Dec. 22.

Accountant Branch

The following Pilot Officers on probation are confirmed in rank and are promoted to rank of Flying Officer:—H. R. Withers, K. A. Jackman; Dec. 7.

Memorandum

Lieut. J. Howard is deprived of permission to retain his rank on conviction, by the Civil Power; Nov. 1.

Reserve of Air Force Officers

The following are confirmed in rank:—Flying Officers H. C. Adams, M.C.; Dec. 8. M. D. Barber; Dec. 8. A. M. Diamant; Dec. 8. H. G. Travers, D.S.C.; Dec. 22. R. A. Kendrick; Dec. 7.

The following Flying Officers are transferred from Class A to Class C:—J. E. Taylor; May 20. R. T. Bark; Aug. 27. Flying Officer W. M. Long relinquishes his commission on completion of service and is permitted to retain the rank of Flight Lieutenant; Nov. 11. The following Flying Officers relinquish their commissions on completion of service:—J. Edmunds; Dec. 5. F. M. Greenwood; Dec. 23. R. M. Jamison, D.F.C.; Dec. 28. Flying Officer G. T. Whitcombe relinquishes his commission on account of ill-health, and is permitted to retain his rank; Dec. 29. The commission of Pilot Officer on probation W. Scott is terminated on cessation of duty; Dec. 2.

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Wing Commanders: V. Gaskell-Blackburn, D.S.C., A.F.C., to R.A.F. Depot, Uxbridge; 29.12.26. C. C. Durston to No. 9 Sqdn., Manston, to command, 29.12.26.

Squadron Leaders: A. Lees, to No. 9 Sqdn., Manston; 5.1.27. A. N. Gallehawk, A.F.C., to No. 14 Sqdn., Palestine; 2.12.26. J. Everidge, M.C., to No. 2 Armoured Car Coy. and Repair Section, Palestine, 2.12.26.

Flight Lieutenant: W. G. Meggett, M.C., to Fighting Area, H.Q., Uxbridge, 16.12.26.

Flying Officers: (Hon. Flight Lieut.) L. P. Winters, to H.Q., Iraq; 17.12.26. G. E. Nicholls, to R.A.F. Base, Calshot; 1.1.27. C. G. C. Sullivan, to No. 13 Sqdn., Andover; 15.12.26.

Flying Officers: H. J. Paine and R. J. E. Haynes, to Station Commandant, Basrah, 7.12.26. F. L. Kingham, to No. 4 Armoured Car Coy., Iraq, 7.12.26. G. Lacey, to Aircraft Depot, Iraq, 7.12.26. B. T. Crook, to No. 6, Armoured Car Coy., Iraq, 7.12.26. A. B. Kay, to No. 6 Sqdn., Iraq, 7.12.26. E. F. Thorpe, to Aircraft Depot, India, 7.12.26. (Hon. F/Lt.) I. E. Brodie, to No. 5 Sqdn., India, 7.12.26. M. D. Ommanney, and C. A. Bell, to No. 31 Sqdn., India, 7.12.26. R. H. Holmes, to No. 60 Sqdn., India, 7.12.26. F. W. Wrench, to R.A.F. Training Base, Leuchars, 15.12.26. R. H. Barlow, to R.A.F. Training Base, Leuchars, 23.12.26. R. F. Overbury, to Sch. of Naval Co-operation, Lee-on-Solent, 1.1.27. L. Butler, to Home Aircraft Depot, Henlow, 29.12.26. V. A. C. Ross, to No. 58 Sqdn., Worthy Down, 1.1.27. I. G. E. Dale, to R.A.F. Training Base, Leuchars, 1.1.27. P. Coyle, to Aircraft Depot, India, 11.12.26. J. F. Mehan, to No. 2 Wing H.Q., India, 11.12.26. L. J. Booth, and J. H. Powle, to No. 20 Sqdn., India, 11.12.26. F. S. S. Lamprey, to No. 208 Sqdn., Egypt, 18.12.26. L. R. W. Tillard, H. C. Macphail and R. D. Adams, to No. 31 Sqdn., India, 11.12.26. N. K. Howard, to Aircraft Depot, India, 11.12.26. E. S. Burns, to R.A.F. Base, Gosport, 1.1.27.

Pilot Officers: E. G. H. Russell-Stracey, J. N. Young, and T. K. Merrett, to Aircraft Depot, India, 7.12.26. A. V. Hammond, to No. 208 Sqdn., Egypt, 7.12.26. J. D. A. Keary, to R.A.F. Training Base, Leuchars, 10.12.26. E. G. Hordern, to Station Flight, Duxford, 1.1.27. G. B. Collet, to No. 5 Sqdn., India, 11.12.26. W. R. J. Spittle, and C. J. Veevers, to Aircraft Depot, India, 11.12.26. J. C. Lewis, to No. 28 Sqdn., India, 11.12.26.

Stores Branch

Squadron Leaders: W. C. Clark, to Stores Depot, Iraq, 7.12.26. F. Tedman, M.B.E., to Aircraft Depot, Iraq, 7.12.26. N. R. Fuller to H.Q., Iraq, 7.12.26.

Flight Lieutenants: E. E. Porter, M.B.E., D.C.M. and A.T. Shaw, to Aircraft Depot, Iraq, 7.12.26. H. E. Tansley, M.C., to Supply Depot, Egypt, 7.12.26. E. W. Lawrence, to R.A.F. Depot, Egypt, 7.12.26. J. Hobbs, to Aircraft Depot, India, 11.12.26.

Flight Lieutenant W. Thorne, to Aircraft Depot, Iraq; 4.12.26.

Accountant Branch

Wing Commander C. G. Murray, O.B.E., to H.Q., Iraq, for duty as Command Accountant, 7.12.26.

Squadron Leader: J. L. Robertson to H.Q. Accountant Office, Iraq, 7.12.26.

Flight Lieutenant J. S. Griffiths, to Brigade Accountant Office, Iraq, 7.12.26. **Flying Officers:** J. O. Morrison, to No. 6 Sqdn., Iraq, 7.12.26. R. W. Collinson, to H.Q., Egypt, 18.12.26.

Medical Branch

Squadron Leaders: D'A. Power, M.C., to H.Q., Air Defence of Great Britain, Uxbridge, 8.1.27. R. S. Overton, to H.Q., Iraq, 7.12.26. W. E. Hodgins, M.B., to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 17.11.26. W. E. Hodgins, to Air Ministry, Directorate of Med. Services, 5.1.27.

Squadron Leaders: H. A. Hewat, M.B., D.T.M. and H., to R.A.F. Officers' Hospital, Uxbridge; 17.1.27. A. J. Brown, D.S.O., to R.A.F. Depot, Uxbridge; 27.1.27.

Flight Lieutenant: W. E. Barnes, to R.A.F. Hospital, Halton, 28.1.27.

Flight Lieutenant B. F. Haythornwaite, M.B., B.A., to Basrah Combined Hospital, Iraq; 4.12.26.

Flying Officers: A. F. Cook, to Palestine General Hospital, 7.12.26. L. I. Ryder, to R.A.F., British Hospital, Iraq, 7.12.26. J. W. D. McKeown, M.B., and E. J. Jenkins, to H.Q., Egypt, 14.12.26.

Flying Officer M. D. Rawkins, M.B., B.S., to Research Lab. and Med. Officers' Sch. of Instruction, on appointment to a Short Service Comm.; 20.12.26.

Chaplains' Branch

Rev. M. K. MacLeod, M.A., F.S.A., to Headquarters, Iraq, 7.12.26. Rev. W. P. Hughes, to R.A.F. Depot, Egypt; 23.11.26.

NAVAL APPOINTMENTS

The following appointments have been made by the Admiralty:—

Lieut. (Flying Officer, R.A.F.) W. S. Lea, to *Victory*, addl., to be lent for flying duties in No. 207 Bombing Squadron; 5.1.27.

Lieuts., E. (Flying Officers, R.A.F.) A. D. Merriman and K. A. B. Hutson to *Victory*, addl., to be lent for course at R.A.F. home aircraft depot, Henlow; 3.12.26.

WESTLAND AIRCRAFT SOCIETY

Yeovil Branch of the Royal Aeronautical Society

It will be seen from the above title that the Westland Aircraft Society is now affiliated with the Royal Aeronautical Society.

The Lectures which have been arranged for the second half of the session 1926-7 are as follows:—

General Interest Lectures

Jan. 7.—Squadron Leader Sir C. J. Quintin Brand, K.B.E., D.S.O., M.C., D.F.C. "My African Flight."

Jan. 28.—A. P. Young, Esq., A.M.I.E.E. (of the British Thomson-Houston Co.) "Magnets."

Feb. 4.—A. H. R. Fedden, Esq., F.R.Ae.S. (of the Bristol Aeroplane Co.) "Air Cooled Engines."

Feb. 18.—H. B. Wyn Evans, Esq., M.B.E., R.C.N.C. (Hon.) (Air Worthiness Section). "Air Ships."

Mar. 4.—Flt. Lt. B. C. H. Cross, D.F.C. (Felixstowe). "Some Practical Aspect of Flying-Boat Development."

April 1.—Major L. P. Openshaw, M.A. (Test Pilot, Westland Aircraft Works). "Test Flying."

April 22.—W. E. Park, Esq., A.R.C.Sc. "Construction of Airscrews."

Ground Engineers' Lectures

Jan. 5.—Mr. Sutcliffe. "Testing of Materials."

Jan. 12.—Mr. Gibson. "Breakages, Strains and their Repair, &c."

Jan. 19.—Mr. Carey. "Other Aircraft Timbers."

Jan. 26.—Mr. H. Burdett (of Messrs. The Improved Liquid Glues Co.). "Glues."

Feb. 2.—Mr. Somers, A.I.D. "Engine Installation, Maintenance and Overhaul from the G.E.'s point of view."

Feb. 9.—Mr. Hopcroft (of Messrs. Firth's). "Aircraft Steels."

Feb. 16.—Mr. J. E. Charlton (of Messrs. Smith's). "Aircraft Instruments."

Feb. 23.—Mr. Goswell. "Workshop Processes."

Mar. 2.—Mr. Swetman and Mr. Millman. "Workshop Processes."

Mar. 9.—Mr. Robson. "Compasses—Installation and Swinging."

Mar. 16.—Flt. Lt. F. J. Hooper. "Wireless Installation."

Mar. 23.—Capt. Keep. "Equipment Installation."

Mar. 30.—Mr. Widgery. "The Wind Tunnel."

The ground engineers' lectures are mainly of an elementary but essentially practical type and they will be reproduced shortly in pamphlet form for sale to members and others. Prices and full list will be announced later, meanwhile inquiries may be addressed to the secretary, Mr. V. S. Gaunt Westland, Aircraft Works, Yeovil.

ROYAL AERONAUTICAL SOCIETY NOTICES



ARRANGEMENTS have been made with the Air Ministry to publish extracts, from the scientific press of the world, of articles on aeronautics and its allied sciences.

These extracts, which will be published as issued by the Air Ministry in the "Journal of the Royal Aeronautical Society," will prove of inestimable value to all those who are interested in the technical progress of aeronautics throughout the world. A very wide field is being covered, and the full sources of information are given in every case, so that those who are interested can obtain copies of the publication from which an abstract has been made.

Among the subjects covered in the first of these extracts may be noted: Fuels, and their Characteristics; Lubricants and Lubricating Systems; Light Alloys in Aircraft Engines; Supercharging; Cooling; Light Alloys generally; Dopes; Paints and Varnishes; Fluid Motion; Wing Design; Wireless, Armament; and Airship Design.

Informal Discussion.—On January 18, at 6 p.m., Mr. A. H. R. Fedden will open an important informal discussion on "Oil Cooling." This discussion will take place in the Library of the Society. No tickets of admission are required. The chair will be taken by the Master of Sempill, Chairman of the Society.—J. LAURENCE PRITCHARD, *Secretary*.

NEW YEAR PROMOTIONS IN THE R.A.F.

AMONGST the New Year promotions in the R.A.F.—a full list of which will be found on p. 7—perhaps the most interesting is the promotion of Air Chief-Marshal Sir Hugh Trenchard, D.S.O., Chief of the Air Staff, to the rank of Marshal of the Royal Air Force. This rank, which is the highest in the R.A.F., and is the equivalent of Admiral of the Fleet in the Navy and Field-Marshal in the Army, was created in 1919 when the R.A.F. titles were reorganised. Sir Hugh Trenchard is the first officer to hold this rank. It may be of interest to note here that Sir Hugh—disrespectfully but affectionately known in the Service as "Boom"—entered the Army in 1893 and learnt to fly in 1912, obtaining his "ticket" on the Sopwith School Farman at Brooklands on August 13 that year. In 1913 he was Assistant Commandant of the Central Flying School, R.F.C., and Commandant in 1914. He was in command of the First Wing of the R.F.C. in France at the commencement of the Great War, and later G.O.C., R.F.C. in the Field, with the rank of Maj.-Gen. In 1918 he became Chief of Air Staff and undertook the forming of the Royal Air Force on the amalgamation of the R.F.C. and R.N.A.S., and later organised the R.A.F. on a peace-time basis.

Gloster Aircraft's New London Office

Will our readers please note that the Gloster Aircraft Co., Ltd., have changed their London office, and have moved from 49, Rathbone Place to 5, Grafton Street, Bond Street, W. Their telephone number is now Regent 7355-6; telegrams "Glosairera," London.

Hawker "Danecock's" Altitude Record

News has just been received from Denmark to the effect that the Hawker "Danecock" machines of the Royal Danish Naval Air Service—several of which were supplied a short while back by the H. G. Hawker Engineering Co., Ltd.—have set up a new altitude record for Scandinavia. The flight was carried out under service conditions with full load, the pilots being from the Royal Danish Naval Air Service.

REARRANGEMENT OF FORECAST DISTRICTS

THE Air Ministry announces that the Meteorological Office has decided to rearrange the districts into which the British Isles are divided for forecast purposes from January 1, 1927. The changes affect Scotland and the Isle of Man. In the past the mainland of Scotland has been divided into three districts only, the east, southwest and northwest. Weather conditions differ so widely over a mountainous country like Scotland, that these three districts have been found insufficient, and it has been decided to double the number, dividing the mainland into six districts in place of three. On the other hand, the Hebrides and the Isle of Man will no longer form separate districts, the Hebrides being grouped with N.W. Scotland and the Isle of Man with S.W. Scotland. The Orkney and Shetland Islands will remain, as hitherto, a separate district. The new districts will be as follows:—

District 11—S.E. Scotland.—Extends on the East Coast from Berwick-on-Tweed to Montrose. Includes the following counties:—Berwick, Roxburgh, Selkirk, Peebles, Haddington, Edinburgh, Linlithgow, Clackmannan, Kinross, Fife, Forfar.

District 12—S.W. Scotland.—Extends on the West Coast from the Solway Firth to Loch Long. Includes the Isle of Man and the following counties:—Dumfries, Kirkcubright, Wigtown, Ayr, Lanark, Renfrew, Dumbarton, Stirling.

District 13 (A)—W. Scotland.—Extends on the West Coast from Loch Long to Loch Shiel. Includes Argyll and Bute.

District 13 (B)—N.W. Scotland.—Extends on the West Coast from Loch Shiel to Cape Wrath. Includes the western parts of the counties of Inverness, Ross and Sutherland west of a line through Rannoch Station, Fort Augustus, Beaulieu, Lairg and Melvich. Also the Hebrides.

District 14—Mid Scotland.—Perth.

District 15—N.E. Scotland.—Extends on the East Coast from Montrose to Duncansby Head. Includes the counties of Kincardine, Aberdeen, Banff, Elgin, Nairn and the eastern parts of Inverness, Ross and Sutherland. Also Caithness.

District 16—Orkneys and Shetlands.—Under this redistribution, Edinburgh will remain in district 11 and Glasgow in district 12. An important change is made in the far north, where the eastern and western parts of the counties of Inverness, Ross and Cromarty and Sutherland will be separated from one another. Formerly these counties were all included in a single district. Full particulars of the different districts can be obtained from the Director, Meteorological Office, Air Ministry, Kingsway, London, W.C.2, or from the Superintendent, Meteorological Office, 6, Drumshugh Gardens, Edinburgh.

CAIRO-KARACHI AIR MAILS

THE Postmaster-General announces that the fortnightly Air Mail Service between Egypt (Cairo) and Iraq (Baghdad) is to be extended to Basra. A further extension to Karachi will be made later. The following improved facilities will be offered forthwith:—The Air Mail from London of Thursday the 6th inst., and fortnightly thereafter, will be due to reach Baghdad late on the afternoon of the next Thursday (7 days from London), and Basra on the Friday morning (7½ days from London). At Basra it will be due to connect with the fast Saturday mail steamer due at Karachi on the second Thursday (14 days from London), and also with the slow service for various Persian Gulf ports, leaving Basra on alternate Sundays (January 16, 30, &c.). Thus, in the week of despatch, the Air Mail will offer, in comparison with transmission by the Desert Motor Route, or by the sea route via Bombay, a saving in time of transit of about 2 and 17 days respectively to Baghdad, about 3 and 13 days respectively to Basra, approximately 7 days to Bushire and other Persian Gulf ports, and about 2 days to Karachi and North-West India (Sind, Baluchistan, North-West Frontier Province, Punjab, Kashmir). The rates of air fee payable (in addition to ordinary postage) will remain for the present as already indicated in the current Air Mail Leaflet (July, 1926 edition) for Iraq, West Persia and India respectively, viz.:—on letters, postcards, printed papers, &c., for Iraq, 3d. per oz., for Persia, South and West, Arabia North East, 3d. per oz.; India, 6d. per oz.

PUBLICATIONS RECEIVED

Calendar, 1927. Aerial House, The Hyde, Hendon, London, N.W.9.

Charles Lett's Engineer's Diary, 1927. J. E. Dodsworth. Charles Letts and Co., Southwark Bridge Buildings, London, S.E.1. Price 3s.

Aeronautical Research Committee Reports and Memoranda. No. 1016 (M.36).—Some Physico-Chemical Studies on the Effect of Sunlight on Cotton. By Guy Barr and Isabel H. Hadfield. July, 1926. Price 1s. net. No. 1043 (Ac. 230).—Photographs of the Flow Round a Model Screw Working in Water, Especially in the Vortex Ring State." By C. N. H. Lock and H. C. H. Townend. May, 1926. Price 9d. net. H.M. Stationery Office, Kingsway, London, W.C.2.

AERONAUTICAL PATENT SPECIFICATIONS

(Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.)

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Published January 6, 1927

- 20,197. I. I. SIKORSKY. Flying machines. (262,489.)
- 22,536. AIRSHIP GUARANTEE CO., LTD., and B. N. WALLIS. Built-up girders or frames of airships, etc. (262,511.)
- 22,538. AIRSHIP GUARANTEE CO., LTD., and B. N. WALLIS. Riveting of metal girders, frames, etc., to tubes or tubular parts. (262,512.)
- 27,148. O. C. FIELD. Aircraft. (262,565.)
- 29,456. S. E. SAUNDERS. Aeroplanes. (262,579.)

APPLIED FOR IN 1926

Published January 6, 1927

- 24,331. L. INGRAM. Fire prevention and extinguishing apparatus for use with petrol tanks or containers. (262,697.)

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